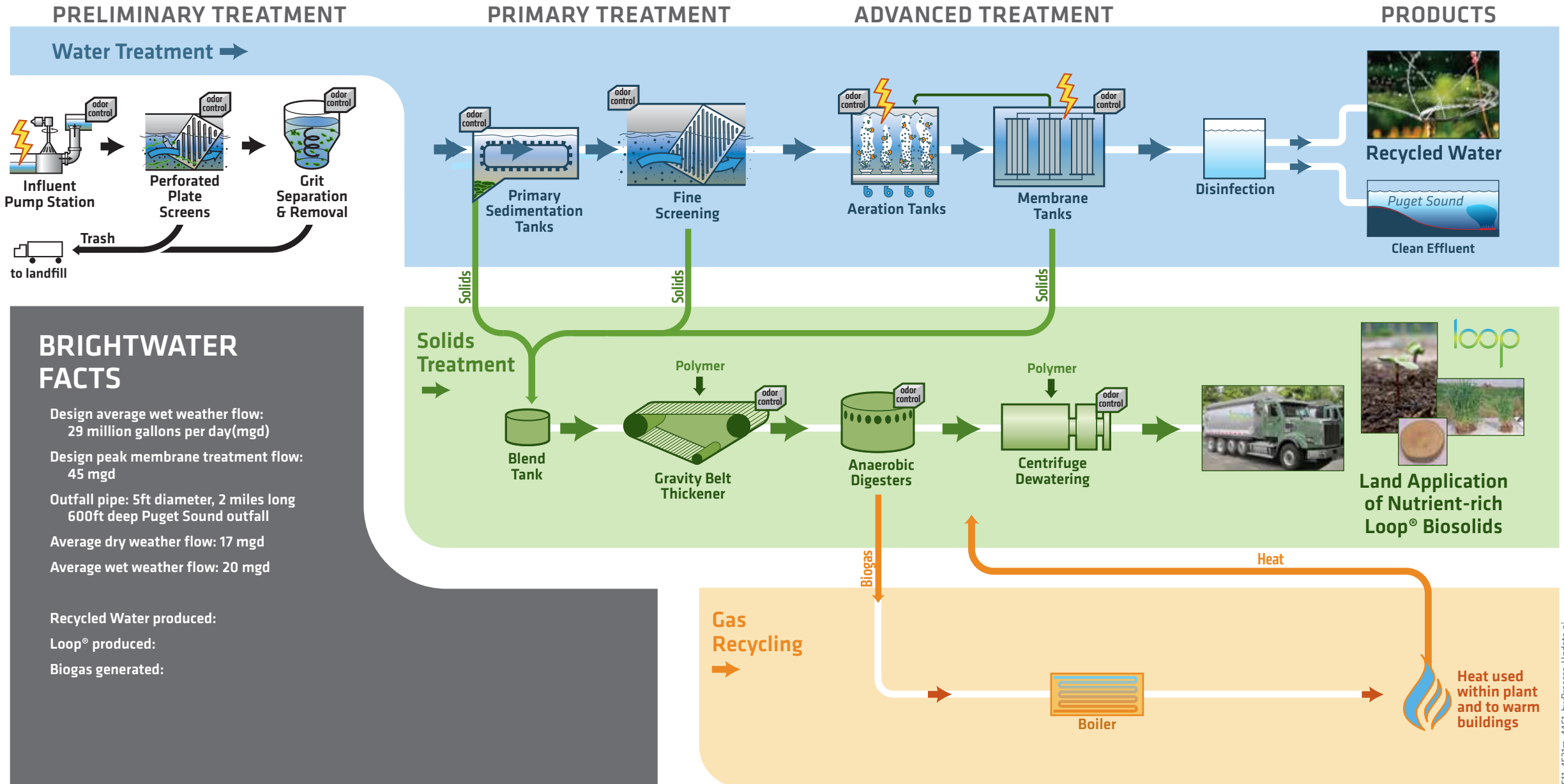
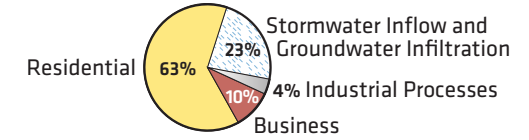


Brightwater Treatment Process

WHAT'S COMES INTO BRIGHTWATER?

Typical Flows by Source During Winter Months





King County

Department of Natural Resources and Parks
Wastewater Treatment Division

At Brightwater

Approximately 20 million gallons of sewage come through Brightwater every day, carrying trash, dirt, organic waste, pathogens, and household chemicals from homes and businesses in northeast King County and south Snohomish County areas.

PRE-TREATMENT INDUSTRIAL WASTE

Industries, factories, breweries and other businesses are required to pre-treat their wastewater before sending it to the treatment plant. This removes harmful pollutants and protects the biological treatment processes and helps ensure the quality of the clean water entering the Puget Sound, and the reclaimed water and Loop® biosolids (fertilizer) that are returned to our communities and environment.

WATER TREATMENT

1. Preliminary Treatment: Trash and dirt removal

Screens filter trash that enters the treatment plant. All trash removed is trucked to a landfill.

The water then enters an aerated grit removal basin where air is added to help separate the dirt, rocks, sand and gravel (grit) out of the water. The removed grit is trucked to a landfill.

2. Primary Treatment: Settling out organic solids

Water enters primary sedimentation tanks and slows down. Oils and grease float to the surface and heavy organics (human waste, food waste) settle to the bottom. Scrapers remove the organic solids from the surface and bottom of the tank and they are piped to the solids treatment system.

This process removes approximately 60 percent of the organic solid waste.

3. Advanced Secondary Treatment: Biological treatment and membrane filters.

Water then flows into aeration tanks (Bio-reactors): oxygen and bacteria (bacteria come from return activated sludge from later in the process) are added to the 60 percent clean water. The oxygen activates the bacteria causing them to reproduce and eat/breakdown suspended and dissolved organic waste left in the water.

This mixture of air, bacteria and 60 percent clean water is pumped into the membrane basins. Membrane technology uses ultra-fine filters to remove the bacteria and solids remaining in the water. The filtered bacteria/biomass will mostly be returned to the aeration tanks to become the next activated bacteria; what is not returned will be sent to solids treatment.

Water leaving the membrane filters is cleaned to a reclaimed water standard that can be recycled for non-drinking uses after disinfection.

4. Disinfection: Destroying pathogens

The water is disinfected using hypochlorite (a strong bleach) before sending the water to Puget Sound.

SOLIDS TREATMENT

Biological treatment and dewatering

The organic solids removed during primary and secondary treatment are (1) blended together (2) thickened (3) Digested—biologically broken down (4) dewatered and converted into Loop® biosolids.

The digestion process grows anaerobic bacteria in a hot (98°F), no-oxygen environment to break down the organic waste. As the bacteria decompose the waste it is converted into nutrients and biogas.

The dewatering processes use polymer to thicken and dewater the solids making treatment and transportation more effective and efficient.

RESOURCE RECOVERY

Recycled water

After disinfection, water is more than 99 percent cleaner than when it came into the plant, and clean enough to meet state Class A Reclaimed Water standards for non-drinking uses such as irrigation and industrial processes.

Loop® biosolids (nutrients)

The solids treatment process produces both nutrient-rich biosolids fertilizer and biogas from the month long decomposition of organic waste. The biosolids product, Loop®, is sold to farms and forests as an alternative to chemical fertilizers. It can be composted further to create GroCo, a product for gardens and landscapes.

Energy

Biogas is recycled onsite as fuel for a boiler system that produces hot water that heats the digesters and the buildings around the facility.

ODOR CONTROL

Biological, chemical, and carbon scrubbers are used to remove odor causing contaminants from the air around the treatment processes - to ensure that there are no odors outside of the treatment plant property.

YOU CAN HELP

- Flush only human waste and toilet paper. Other ‘flushable’ products are NOT good for pipes and sewer systems.
- Use simple, biodegradable personal and cleaning products. Find recipes to make your own!
- Control rain water: stormwater is big problem for water quality. Install a rain garden, rain barrels and/or cisterns. Find simple ways to prevent runoff pollution.